

REMARKS

Review and reconsideration of this application are respectfully requested in view of the above amendments and, particularly in view of the following discussion.

At page 2 of the Office Action under the heading "Election/Restriction" the Examiner states:

(1) that the application contains claims 6, 7 and 18-20 drawn to an invention nonelected without traverse in Paper No. 7, and that a complete reply to the Final Rejection must include cancellation of nonelected claims or other appropriate action;

(2) that newly submitted claims 23 and 26-29 are drawn to the same Species II, which was previously non-elected without traverse; and

(3) since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits, and claims 23 and 26-29 are withdrawn from consideration as being directed to a non-elected invention.

With respect to (1) above, claims 6, 7, 18-20 have been withdrawn from further consideration. Claim 18 was inadvertently amended in the previous response and, therefore, has canceled by the present amendment and re-submitted as claim 30 which should now be withdrawn from further consideration as a nonelected species. Applicant believes that generic claims will be found allowable in view of the present amendments and remarks. Accordingly, it is believed that the withdrawn claims directed to a microprocessor will also be considered allowable.

With respect to (2) and (3) above, claim 23 has been withdrawn and 26-29 are canceled.

A new sheet of drawing is submitted herewith to comply with the Examiner's notation that no second sheet including changes in red of proposed drawing corrections filed 10/02/02 was received. The new sheet of drawings shows the changes previously made in red as previously stated.

At page 2 of the final rejection, under the heading "Drawings" the Examiner states:

(4) that no second sheet including changes in red of proposed drawing corrections filed 10/02/03 was received;

(5) that the drawings are objected to under 37 CFR 1.83(a) in that the drawings must show every feature of the invention specified in the claims, e.g., the claimed "hydraulic pump driven by a belt" (claim 1) and the claimed "controlling means...integrated into the hydraulic accumulator" (claims 21 and 24) must be shown or the feature(s) canceled from the claim(s).

(6) that a proposed drawing correction or corrected drawings are required in reply to the Office Action to avoid abandonment of the application.

With respect to (4) and (6) above, applicant is including herewith a new sheet of drawings which include all of the amendments to the Figures previously made as well as those amendments in the present response.

With respect to (5) above, applicant has now amended claims 1 and 15 to describe the hydraulic pump as being operably connected to said pulley rather than being driven by a belt. Concerning the "controlling means...integrated into the hydraulic accumulator" shown in claims 21 and 24, applicant has amended claim 21 to depend from claim 3 rather than claim 1 and has amended the term "controlling means" to "hysteresis pressure switch". Claim 24 has also been amended to change the term "controlling means" to "hysteresis pressure switch". These amendments to claims 21 and 24 should now be withdrawn since the specification clearly states that the hysteresis pressure switch may be separate from or integrated with the hydraulic accumulator.

At page 3 of the Final Rejection, under the heading "Specification" the Examiner stated that it is noted that applicant did not provide a marked-up version of the changes made to the fifth full paragraph of page 3, on page 2 of the amendment filed 10/2/04.

With respect to the fifth full paragraph on page 3, numeral "12" has been corrected to read "36" and numeral "32" has been corrected to read "38".

With respect to the paragraph bridging pages 2 and 3, numeral 18 has been added at line 7 of the paragraph (see the "amendments to the Specification" at page 2 of the present amendment).

The Examiner's attention is drawn to new claim 30 which is re-presented claim 18.

Claim 18 was previously withdrawn, but in a prior amendment, applicant inadvertently amended the withdrawn claim 18. Applicant has now re-presented claim 18 as new claim 30 for the purpose of maintaining the withdrawn and non-amended status of claim 18. In the event that claim 1, which is generic to both the hysteresis pressure switch and the microprocessor, is found to be allowable, claim 30 and the dependent claims thereon (now dependent upon claim 18) can be considered.

Under the heading "Claim Rejections - 35 USC § 112

(9) Claims 21, 22, 24 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. It is alleged that the claims contain subject matter which was not described in the specification.

Claims 21 and 22 have been canceled; however, claims 24 and 25 are believed to be well-grounded since the specification at page 5, lines 11-13 clearly state that "To further reduce the total system space required and reduce the part's count, the hysteresis pressure switch 18 may be integrated into the hydraulic accumulator 22"; therefore, the hysteresis pressure switch may or may not be integrated into the hydraulic accumulator. Accordingly, it is believed that this rejection should be withdrawn.

Claims 1-5 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner alleges: (1) that the limitation "said power steering pump" (claim 1, lines 15-16 and claim 15, lines 16-17) has no antecedent basis; (2) that the limitation "said rotary actuated proportional valve" (claim 1, lines 22-23 and claim 15, lines 23-24) has no antecedent basis; and (3) that the limitation "said hysteresis pressure switch" (claim 15, line 10) has no antecedent basis.

In view of the above amendments wherein "said power steering pump" has been corrected to "said hydraulic pump" (claim 1, lines 15-16 and claim 15, lines 16-17); wherein "said rotary actuated proportional valve" has been corrected to "said rotary actuated proportional control valve" (claim 1, lines 22-23 and claim 15, lines 22-23); and wherein "said hysteresis pressure sensor" has been corrected to "said hysteresis pressure switch" (claim 15, line 7), it is believed that this rejection can be withdrawn.

Art rejections under 35 USC § 102 and § 103

(16) Claims 1-3 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Saita et al. (US Patent 5,950,757) in view of Applicant's Admitted Prior Art (AAPA). The Examiner essentially reasserts his previous rejection under ~~alleges~~ that Saita discloses steering means which is a hydraulic power assisted steering system for use in a vehicle including a pulley powered by a crankshaft in the vehicle; a vehicle ignition power source (which the Examiner states is inherent in a vehicle to allow ignition of the fuel in the engine); a hydraulic pump driven by a belt off the pulley; a clutch coil positioned between the pulley and the hydraulic pump, wherein the clutch coil is operably connected to the pulley; and controlling means the hydraulic pump to provide hydraulic power to the system, wherein the controlling means for engaging and disengaging the clutch with the pulley and the hydraulic pump to provide hydraulic power to the system, a hydraulic accumulator operably connected to the controlling means to insure that hydraulic power is available when the clutch is disengaged, wherein the hydraulic accumulator dampens transients in the hydraulic system such that the need for hydraulic noise reducing components are not required, a check valve operable connected to the hydraulic pump to maintain hydraulic pressure in the hydraulic accumulator controlling means is a hysteresis pressure switch (the Examiner states that Saita describes, at col. 3, lines 40-45 and col. 4, lines 34-44, how the pressure switch and the control unit work to engage the clutch when the pressure within the passage is below a predetermined level and to disengage the clutch when the pressure is above a predetermined level, and that such description is the very definition of pressure switch with hysteresis); a hydraulic accumulator operably connected to the hysteresis pressure switch to insure that hydraulic power is available when the clutch is disengaged and further including a check valve operable connected to the hydraulic pump to maintain hydraulic pressure in the hydraulic accumulator when the clutch is disengaged. A reservoir containing hydraulic fluid wherein the reservoir has a hydraulic fluid capacity equal to the difference between the maximum charged amount of hydraulic fluid and the minimum discharged amount of hydraulic fluid in the hydraulic accumulator, an actuated control valve operably connected to the reservoir and the check valve, wherein the actuated control valve is provided with a closed center to maintain pressure in the hydraulic accumulator until needed; and a power assist steering cylinder

operably connected to actuated control valve and to a steering rack to provide power assist steering for the vehicle; wherein the controlling means is a hysteresis pressure switch. The Examiner further states that, with respect to the feature wherein the hydraulic accumulator dampens transients in the hydraulic system such that the need for hydraulic noise reducing components are not required, such feature is an inherent characteristic of hydraulic accumulators and therefore the hydraulic of Saita dampens the transients such that noise reducing components are not required; also, an actuated control valve is provided with a closed center to maintain pressure in the hydraulic accumulator until needed.

Applicant notes that, in general, the power steering system of the present invention includes most of the parts taught by Saita et al.; however, Saita et al describes a power steering system wherein anomalies or deviations from the normal of the power steering system are detected by an anomaly detector means in response to a pressure signal during operation of the vehicle, i.e., when the vehicle engine is running and the vehicle is being steered. The anomaly detector means also includes a vehicular speed sensor and a steering angle sensor, both of which are connected thereto.

In accordance with the present invention, electrical power is supplied to the hysteresis pressure switch by the vehicle ignition control system so that power to the steering system is not supplied when the engine is not running or being started which not only insures that the clutch is not engaged when the engine is not running causing a drain on the battery, but also reduces the load on the engine starter since the hydraulic pump would not be engaged during starting of the engine. Since Saita et al. do not teach an electrical power source to a hysteresis pressure switch whereby wasted energy is eliminated when the vehicle is idling and not engaged in actual driving situations, it is believed that the rejection based upon 35 U.S.C. 102(b) can be withdrawn.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saita et al. in view of AAPA, as applied to claim 3 above, and further in view of Gage et al. (US Patent 4,303,089). The Examiner alleges that Saita et al. disclose all of applicants' claimed invention except that the pressure switch is connected to an electrical power source that is the vehicle ignition control system. The patent to Gage et al. is cited as disclosing that it is well known to

connect a pressure switch to a source of electrical power that is the vehicle ignition control system in order to supply energy to actuate the pressure switch when required.

The patent to Gage is concerned with a mechanism which alerts an operator of large vehicles, when the power steering of the vehicle is operating in an emergency mode. This mechanism allows the operator to have sufficient time to bring the vehicle to a safe stop. The emergency mode includes an indicator light and a reserve fluid supply system for supplying fluid in the event that the vehicle engine or primary fluid pressure source fails. The steering system employs an accumulator as a source of emergency steering fluid, an emergency steering valve coupled to the accumulator, to a steering fluid pressure supply pump, and to a main steering control valve and comprises a pressure responsive valve spool which occupies a normal or closed position wherein it prevents the discharge of fluid from the accumulator when the system pressure is above a predetermined minimum value and automatically shifts to an emergency or open position wherein it permits fluid to discharge from the accumulator to the main steering valve when the system pressure decreases to the predetermined minimum value. When the valve spool shifts to its emergency position, it completes an electrical circuit to an indicator which alerts the operator of the vehicle that the steering system is operating in an emergency mode.

While the safety aspect of the invention of Gage is an important concern of power steering systems, the present invention happens to be directed to a totally different aspect of the power steering system. In accordance with the presence invention, electrical power is supplied to the control means by the vehicle ignition system so that power to the steering system is not supplied when the engine is not running or being started which not only insures that the clutch is not engaged when the engine is not running causing a drain of the battery, but also reduces the load on the engine starter since the hydraulic pump would not be engaged during starting of the engine. Specifically, the present invention is directed to a power steering assist system which prevents wasted energy when no power assist is required and also reduces the load on the motor starter during starting of the engine.

Applicant contends that, in the present invention, the hydraulic accumulator is operably connected to the control means whether it is the hysteresis pressure switch or the pressure sensor. These are direct connections between the hydraulic accumulator and the control means

which, in the first embodiment, is a hysteresis pressure switch and, in the second embodiment, a pressure sensor which is used as an input along with other inputs such as steering wheel rotation, vehicle speed, etc. to a microprocessor. In fact, the controlling means (specifically, the hysteresis pressure switch) may, in an alternate configuration, be integrated directly into the hydraulic accumulator. Saita et al., on the other hand, provides a hydraulic accumulator connected to the working fluid passage. Therefore, it is requested that this rejection be withdrawn. At page 8 of the Final Rejection under the heading "Response to Arguments", the Examiner states in (28 and 29) that applicant argues that the connection between the hydraulic accumulator and the control means is a direct connection while the connection in Saita et al is by means of a working passage, but applicant does not recite the "direct connection" in the claims. Applicant believes that the direct connection of the present invention is not the only distinction over Saita et al as argued above. However, if the Examiner would permit the inclusion of such language in the claims, applicant hereby gives the Examiner authority to add such language to claims 1 and 15 (and claim 18, should a generic claim be found to be allowable).

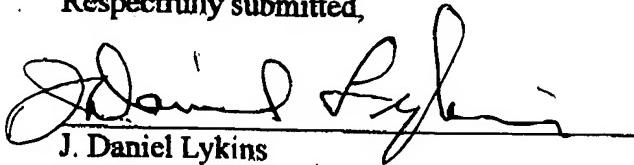
In summary, applicant submits that the present invention is neither anticipated nor obvious over the cited prior art references to Saita et al and Gage et al, both of which pertain to actions of the power steering system during actual driving and steering conditions. The present invention, on the other hand, represents a significant improvement in automotive power steering systems wherein energy is conserved by eliminating the consumption of non-productive energy when no power assist to the automotive vehicle is required, such as when the vehicle is idling and not engaged in actual driving and/or steering situations. In addition to conserving energy, the present invention reduces load on the motor starter.

In view of the foregoing amendments and discussion, it is believed that the present application is now in condition for allowance and an early indication of such is earnestly solicited.

This amendment is submitted for the purpose of placing the application in condition for allowance or, in the alternative, in better condition for appeal. It is believed that the amendment contains no new matter, nor is it believed that the amendment would cause any additional search on the part of the Office. Any amendments to the specification, claims and drawings are

presented in response to the Examiner's requirement or suggestion. The amendments were not presented earlier because they were not considered necessary.

Respectfully submitted,



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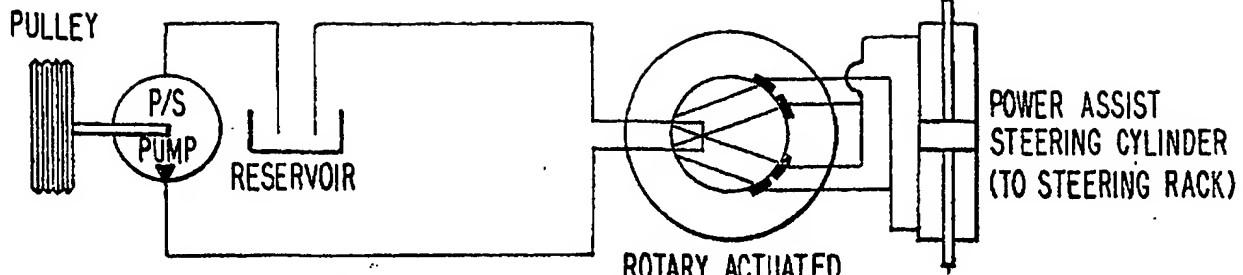
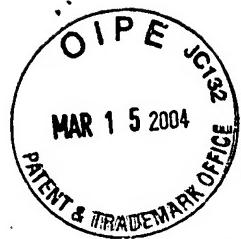


FIG.1
PRIOR ART

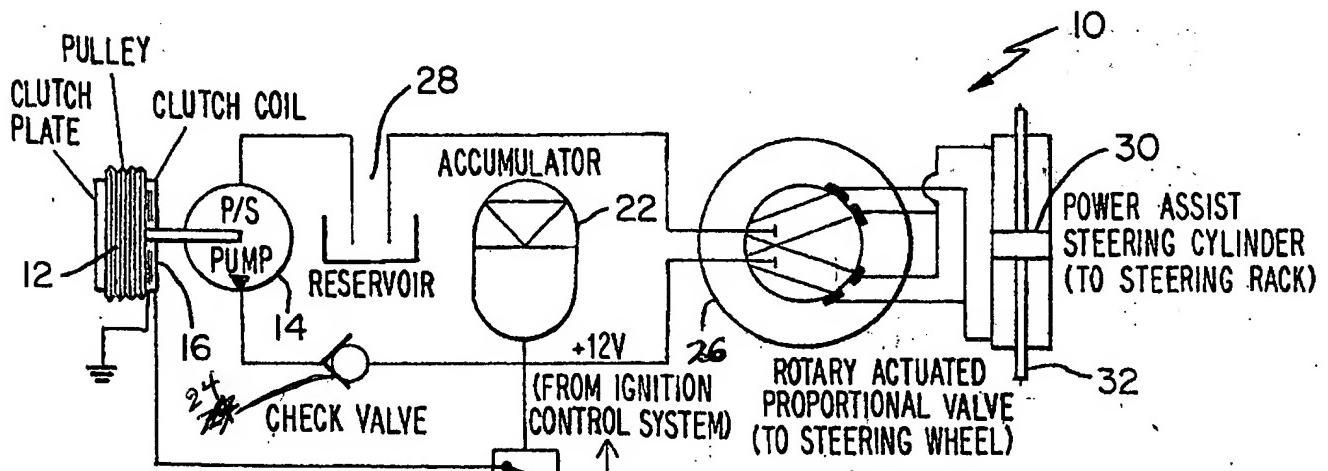


FIG.2
HYSTERESIS
PRESSURE SWITCH

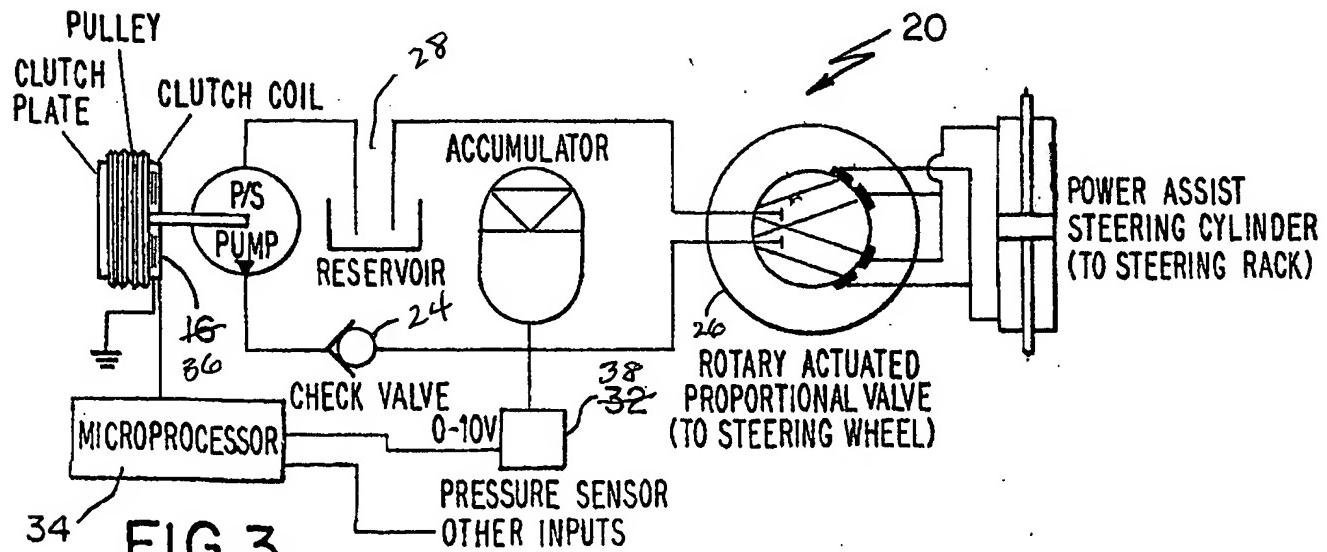


FIG.3